

**IN THE UNITED STATES  
PATENT AND TRADEMARK OFFICE**

**Patent Application**

**Inventors:** John Graeme Houston et al.

**Serial No.:** 10/535600

**Conf. No.:** 7535

**Filing Date:** 05/19/2005

**Art Unit:** 3754

**Examiner:** James F. Hook

**Docket No.:** 9931-008US

**Title:** Helical formation for a conduit

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**APPEAL BRIEF UNDER 37 CFR 41.67**

Pursuant to 37 CFR 41.67, this brief is filed in support of the appeal in this application.

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**REAL PARTY IN INTEREST**

The real party of interest in this application is the assignee of this application:  
Tayside Flow Technologies Limited, Dundee, Tayside, DD2 1TY, United Kingdom.

**RELATED APPEALS AND INTERFERENCES**

There are no related appeals or interferences.

**STATUS OF CLAIMS**

Claims 1 through 15 have been canceled; claims 16 through 27 stand rejected and are being appealed.

**STATUS OF AMENDMENTS**

All amendments have been entered.

### **SUMMARY OF THE CLAIMED SUBJECT MATTER**

A variety of designs of helical formations in conduits have been proposed to encourage a desired flow pattern of a fluid within the conduit. Such helical formations have been proposed for a wide variety of applications, including pipelines and blood flow tubing. The purpose of the helical formations is generally to generate spiral flow of the fluid within the conduit to reduce turbulence and dead spots inside the conduit. And although the use of helical formations has been proposed as beneficial to fluid flow in conduits by helping to generate spiral fluid flow patterns, there has been little or no information on the physical characteristics of the helical formation that is required to create a suitable spiral flow pattern. Some designs of helical formations will be ineffective at creating spiral flow and others will not create a beneficial spiral flow. For example, helical formations having a high helix angle may tend to create turbulence rather than beneficial spiral flow.

#### **(Specification, page 1, lines 5 through 18)**

The present invention enables the use of a helical formation in blood flow tubing in order to impart an optimal spiral flow on blood passing through the blood flow tubing. The helical formation comprises an elongate member that defines at least a portion of a helix. The elongate member comprises a portion which:

- i. extends along the length of the elongate member, and
- ii. extends inwardly from the internal side walls of the blood flow tubing for a predetermined distance.

#### **(Specification, page 1, lines 20-26 and line 34, and page 2, lines 15-16)**

The present application comprises a single independent claim, which is presented, summarized, and mapped below to the Specification by page and paragraph, and to the Drawings.

Independent claim 16 recites:

**16.** A method of imparting spiral flow on blood passing through blood flow tubing comprising the step of providing within the blood flow tubing a helical formation formed from a biocompatible material and comprising an elongate member defining at least a portion of a helix wherein the elongate member comprises an inwardly extending portion which extends along the length of the elongate member, the inwardly extending portion extending inwardly from the internal side walls of the blood flow tubing for a distance equal to between 40% and 60% of the distance from the longitudinal axis of the blood flow tubing to an internal side wall.

Claim 16 recites the use of a helical formation in blood flow tubing for the imparting of spiral flow on blood passing through the tubing, in which the predetermined distance by which the recited portion extends inwardly is equal to between 40% and 60% of the distance from the longitudinal axis of the tubing to an internal side wall of the tubing. The distance from the longitudinal axis of the tubing to an internal side wall of the tubing equates to the radius of the internal diameter of the tubing. The use of the helical formation in the blood flow tubing in order to impart spiral flow is described in the Specification at **Page 1, lines 20-26; Page 2, lines 15-16; Page 3, lines 5-9; and Page 4, lines 4-9; and drawings at Figure 1, insert 4; and Figure 2, fins 6 and 7; and Figures 3 and 4, formation 24.**



**GROUND OF OBJECTION AND REJECTION TO BE REVIEWED ON APPEAL**

**Ground 1: 35 U.S.C. 103 Rejection of Claims 16-27**

Claims 16-27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tayside, European Patent EP 1,254,645 (hereinafter "Tayside"), in view of Kuhlmann, German Patent DE 597,472 (hereinafter "Kuhlmann").

## **ARGUMENTS**

### **Ground 1: 35 U.S.C. 103 Rejection of Claims 16-27**

Claims 16-27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tayside, European Patent EP 1,254,645 (hereinafter "Tayside"), in view of Kuhlmann, German Patent DE 597,472 (hereinafter "Kuhlmann"). The applicants respectfully traverse the rejection.

Claim 16 recites:

**16.** A method of imparting spiral flow on blood passing through blood flow tubing comprising the step of providing within the blood flow tubing a helical formation formed from a biocompatible material and comprising an elongate member defining at least a portion of a helix wherein the elongate member comprises an inwardly extending portion which extends along the length of the elongate member, the inwardly extending portion extending inwardly from the internal side walls of the blood flow tubing for a **distance equal to between 40% and 60% of the distance from the longitudinal axis of the blood flow tubing to an internal side wall.**

(emphasis supplied)

The applicants respectfully submit that it would not have been obvious to someone with ordinary skill in the art to set the height of the fins featured in Tayside to 50% of the radius of the internal diameter of the tube in which they are placed—that is, the Office's assertion made in regard to Kuhlmann.

A 37 CFR § 1.132 affidavit is included in the "Evidence Appendix" to this appeal brief. The applicants request reconsideration of the rejection for the following reasons consistent with the affidavit:

**1. Kuhlmann is old in relation to blood flow tubing.** The Kuhlmann reference precedes the invention of both vascular grafts and endovascular stents by at least three decades. The invention disclosed in Kuhlmann pertains to fluid flow in pipes at a time where the technological innovations leading to vascular stents and grafts would have been inconceivable. Thus, although Kuhlmann neither specifically includes nor excludes vascular conduits (*i.e.*, "blood flow tubing"), one must assume that it could not have been intended to apply to vascular conduits. Therefore, the Kuhlmann reference should be construed narrowly.

**2. Kuhlmann and Tayside are from different technical fields.** The Kuhlmann reference pertains to non-biological Newtonian fluids in rigid pipes. In contrast, the Tayside reference pertains to biological non-Newtonian fluids in compliant vessels. A person with ordinary skill in the art would resist making extrapolations from the earlier Kuhlmann

reference to the later Tayside reference as it would be quite clear that the two refer to very different contexts. The optimal fin dimensions reported for fluid flow in pipes would simply not be thought directly applicable to human models. As a consequence, the subsequent revelation in the instant application that the optimal fin dimensions for a vascular conduit are the same as those for a non-vascular pipe would be surprising to a person with ordinary skill in the art.

**3. Kuhlmann and the present invention are from different technical fields.**

Vascular conduits which convey blood, such as the blood flow tubing of the present invention, are prone to complications that are not applicable to rigid tubes in a non-biological context, such as the rigid pipe taught in Kuhlmann. These complications include i) acute occlusion, ii) intimal hyperplasia (*i.e.*, tissue ingrowth), and iii) thrombus (*i.e.*, clot) formation. The concept of protruding fins whose dimensions are 50% of the radius of the internal diameter of the tubing in which they are applied is counterintuitive, in that such a fin height might lead to increased risk of all three complications:

- a) A series of taller fins may feasibly reduce the luminal free area (*i.e.*, the inner open space) available for blood flow thereby reducing through-flow and promoting acute occlusion, stagnation being a vital component of blood clotting.
- b) Taller fins with dimensions leading to a "maximum vortex," as described in Kuhlmann, may generate intimal hyperplasia or atheroma deposition, both of which tend to occur at branch points of vessels and anywhere else where flow separation occurs.
- c) Taller fins presenting larger surface area may promote platelet clumps or clot formation on the stents or grafts in which they feature.

**4. Assumed unworkability.** Up to the time that the invention was made, one skilled in the art would have thought that the techniques used in the invention were unworkable. Such a person at the time would have taken great care not to oversize stents in relation to the vessel wall in case doing so would lead to infolding of the stent interstices. The relevance of this to the rejection under appeal is that oversizing is a situation akin to using tall protruding fins. Taking care not to oversize the stents would have arisen out of apprehension that oversizing could lead to the complications listed in points 3a through 3c above.

For these reasons, the applicants respectfully submit that the rejection of claim 16 is traversed.

Because claims 17-27 depend on claim 16, the applicants respectfully submit that the rejection of them is also traversed.

**CONCLUSION**

The applicants have demonstrated that the logic underlying the Office's rejection is untenable, and, therefore, that the rejection is not sustainable. For this reason, the applicants respectfully request the Board of Appeals to reverse the decision of the Examiner as provided for in 37 C.F.R. 41.50(a).

Respectfully,  
John Graeme Houston et al.

By **/Kenneth Ottesen/**  
Kenneth Ottesen  
Reg. No. 54353  
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100 Commons Way, Ste. 250  
Holmdel, NJ 07733  
United States of America

### **Claims Appendix**

#### **Claims 1-15** (canceled)

**16.** (previously presented) A method of imparting spiral flow on blood passing through blood flow tubing comprising the step of providing within the blood flow tubing a helical formation formed from a biocompatible material and comprising an elongate member defining at least a portion of a helix wherein the elongate member comprises an inwardly extending portion which extends along the length of the elongate member, the inwardly extending portion extending inwardly from the internal side walls of the blood flow tubing for a distance equal to between 40% and 60% of the distance from the longitudinal axis of the blood flow tubing to an internal side wall.

**17.** (previously presented) The method of claim 16, wherein the inwardly extending portion extends inwardly for a distance equal to between 45% and 55%.

**18.** (previously presented) The method of claim 17, wherein the inwardly extending portion extends inwardly for a distance equal to substantially 50% of the distance from the longitudinal axis of the blood flow tubing to an internal side wall.

**19.** (previously presented) The method of claim 16, wherein the blood flow tubing has a circular cross-section, and the distance that the inwardly extending portion extends inwardly is a percentage of the radius of the blood flow tubing.

**20.** (previously presented) The method of claim 16, the helical formation comprising two or more inwardly extending formations, arranged in side-by-side relationship extending along the length of the elongate member.

**21.** (previously presented) The method of claim 16, further comprising the step of mounting the helical formation on a side wall of the blood flow tubing.

**22.** (previously presented) The method of claim 21, wherein the helical formation is in the form of an insert adapted to be inserted into the blood flow tubing.

**23.** (previously presented) The method of claim 22, wherein the insert is removable from the blood flow tubing.

**24.** (previously presented) The method of claim 21, wherein the helical formation is an integral part of the side wall of the blood flow tubing.

**25.** (previously presented) The method of claim 24, further comprising the step of deforming a portion of the side wall of the blood flow tubing in order to form the helical formation.

**26.** (previously presented) The method of claim 16, wherein the blood flow tubing comprises a vascular graft.

**27.** (previously presented) The method of claim 21, wherein helical formation is comprised in a stent and the method comprises inserting the stent.

**Evidence Appendix**

Evidence is being submitted pursuant to 37 CFR § 1.132 and is attached.

A showing of good and sufficient reasons as to why the evidence, in the form of an affidavit and which addresses both the Kuhlmann and Tayside references, was not presented earlier is provided here.

**1.** In response to the first Office action mailed on September 8, 2006, it was unnecessary to present the evidence in order to overcome the rejections against the independent claim.

**2.** In response to the second Office action mailed on June 6, 2007, it was again unnecessary to present the evidence in order to overcome the rejections against the independent claim.

**3.** In response to the third (and non-final) Office action dated October 17, 2007, the applicants did in fact try to present some of the points covered in the attached affidavit. It was after reading the Examiner's "Response to Arguments" section of the last Office action, mailed on July 24, 2008, that the applicants decided that it had become necessary to provide an affidavit containing "evidence or proof that the [applicants' assertions] are true when there [were] no examples given from the prior art which would suggest these statements to be true [...]"

**Affidavit**  
**On**  
**Patent Application by Tayside Flow Technologies Limited**  
**Re: US Patent Application Serial No. 10/535,600**

**July 2009**



## **Sumaira Macdonald – Curriculum Vitae**

I am a consultant vascular interventional radiologist and honorary clinical senior lecturer at the Freeman Hospital, Newcastle upon Tyne, United Kingdom. The endovascular management of patients with vascular disease is a routine part of my daily practice. My curriculum vitae is attached separately.

### **Documents Examined:**

1. The Tayside Flow Technologies patent application filed December 23<sup>rd</sup> 1999, number EP 1 254 645 A1 labelled "Tayside".
2. The subsequent patent application from Tayside Flow Technologies filed November 13<sup>th</sup> 2003, number WO 2004/047908 A2 labelled "Patent application in suit" on which US patent application no 10/535,600 is based.
3. A German patent application from Arthur Kuhlmann in Kiel number 597472 dated February 17<sup>th</sup> 1936 labelled "Kuhlmann".

### **Instruction:**

I am asked to consider, as an expert in the field of endovascular intervention, to include vascular blood flow and endovascular prostheses (stents and grafts) what an average practitioner, "skilled in the art" would, prior to November 23<sup>rd</sup>, 2002, conclude on review of two patent applications: "Tayside" (which describes a variety of generic techniques to impart helical flow in vascular grafts and stents including the provision of helical fins or vanes but which remains silent on the dimensions of such fins or vanes) and "Kuhlmann" (which provides the exact dimensions of a spiral "guide surface" applied within "pipes" in order to impart maximum vortex at a relatively low resistance to gaseous, liquid or powdery media transported therein). November 23<sup>rd</sup> 2002 is the priority date of the patent application in suit.

The crux of the matter is whether an expert would, on review of the two patent applications listed above, consider it obvious to set the height of the fins which feature in "Tayside" to 50% of the radius of the internal diameter of the tube in which they are placed – the claim made in "Kuhlmann", thereby arriving at the invention of the "Patent application in suit".

### Opinion:

1. The "Kuhlmann" patent application precedes the invention of both vascular grafts and endovascular stents by at least three decades. The invention pertains to fluid flow in pipes at a time where the technological innovations leading to vascular stents and grafts (conduits for blood) would have been inconceivable thus, although the "Kuhlmann" patent neither specifically includes nor excludes vascular conduits (that is to say, "blood flow tubing" to use the terminology of the patent application in suit) one must assume that it cannot have been intended to apply to vascular conduits.

2. The "Kuhlmann" patent application pertains to non pulsatile non biological Newtonian fluids in rigid pipes. The "Tayside" patent application pertains to pulsatile biological non-Newtonian fluids in compliant vessels. An average expert "skilled in the art" would resist making extrapolations from the earlier "Kuhlmann" patent to the later "Tayside" patent as it would be quite clear that the two refer to very different contexts. The optimal fin dimensions reported for fluid flow in pipes would simply not be thought directly applicable to human (or animal) models. The subsequent revelation (in the "Patent application in suit") that the optimal fin dimensions for a vascular conduit are the same as those for a non-vascular pipe would come as a surprise to most physicians.

3. Vascular conduits (to include grafts and stents) which convey blood are prone to complications that are not applicable to rigid tubes in a non biological context. These complications include acute occlusion, intimal hyperplasia (tissue ingrowth) and thrombus (clot) formation.

4. The concept of a protruding fin whose dimensions are half the radius of the vascular graft or endovascular stent diameter in which they are applied is counterintuitive. It may be considered that such a fin height might lead to increased risk of all three complications:

a) A series of taller fins may feasibly reduce the luminal free area available for blood flow thereby reducing through-flow and promoting acute thrombosis (stagnation being a vital component of blood clotting).

b) Taller fins with dimensions leading to a "maximum vortex" (as described in Kuhlmann) may generate intimal hyperplasia (new

vessel lining in-growth) or atheroma deposition, both of which tend to occur at branch points of vessels and anywhere else where flow separation occurs.

c) Taller fins presenting larger surface area may promote platelet clumps or clot formation on the stents or grafts in which they feature.

5. An expert in the year 2002 would have taken great care not to oversize stents relative to the vessel wall in case this led to infolding of the stent interstices (a situation akin to tall protruding fins) lest this led to the complications listed in 4a-c above. This consideration remains relevant today. Indeed some of the newest generation stents are those formulated for the very small tibial arteries in the calf. In the recent past, if a stent for the tibial artery was needed, the smallest available size of a stent made for another arterial territory (for example the superficial femoral artery) would be used. These often occluded as large stent tines protruded into a very small lumen. The newly available dedicated tibial stents feature a design innovation - the stent tines in cross-sectional diameter are much smaller than those in non-tibial systems and do not protrude into the lumen. The same arguments pertain equally to graft material.

### Summary

Thus, I think it more likely than not that an average expert would, if presented with patents "Tayside" and "Kuhlmann" before 23.11.2002 NOT have concluded that optimal dimension of a fin or vane in a vascular conduit was 50% of the radius of the conduit.

Signed..........

Date.....22nd July 2009.....

## CURRICULUM VITAE

### 1. PERSONAL DETAILS

**FULL NAME:** Sumaira MACDONALD

**CURRENT APPOINTMENTS;** Consultant Vascular Radiologist, Newcastle Hospitals NHS Trust  
(12 Programmed Activities)  
Honorary Clinical Senior Lecturer (Pathology), University of Newcastle upon Tyne

|  |                                |      |
|--|--------------------------------|------|
| <b>EDUCATION &amp; QUALIFICATIONS:</b> | MBChB (Commendation) (Glasgow) | 1991 |
|  | MRCP (UK),                     | 1995 |
|  | FRCR                           | 1998 |
|  | CCST (Clinical Radiology)      | 2000 |
|  | PhD (Sheffield)                | 2004 |
|  | FRCP (Edinburgh)               | 2006 |
|  | FRCP (London)                  | 2006 |

|                               |   |           |
|-------------------------------|---|-----------|
| <b>PREVIOUS APPOINTMENTS:</b> | Pre-registration house officer general surgery (professorial unit) Western Infirmary, Glasgow | 1991      |
|                               | Pre-registration house officer general medicine (professorial unit) Glasgow Royal Infirmary   | 1991-1992 |
|                               | Senior House Officer, medical rotation Monklands and Bellshill Trust, Lanarkshire             | 1992-1995 |
|                               | Registrar in clinical radiology, West of Scotland Rotation                                    | 1995-2000 |
|                               | Post CCST Endovascular Fellow & Honorary Clinical Lecturer, Sheffield University              | 2000-2003 |
|                               | Consultant Vascular Radiologist & Honorary Clinical Senior Lecturer University of Newcastle   | 2003-date |

### MEMBERSHIP OF PROFESSIONAL BODIES:

British Society of Interventional Radiology  
The Vascular Society of Great Britain and Ireland  
Cardiovascular and Interventional Radiological Society of Europe (Membership 1998, Fellowship 2006)  
International Society for Vascular Surgery  
Royal College of Radiologists  
Royal College of Physicians (Glasgow)  
Royal College of Physicians (Edinburgh)  
Royal College of Physicians (London)  
Scottish Radiological Society  
Glasgow Gastroenterology Club  
British Medical Association  
General Medical Council (Full 3556054)  
Medical and Dental Defence Union of Scotland

### UNIVERSITY MERIT AWARDS:

|  |                                       |
|--|---------------------------------------|
| Pharmacology                             | First Class Certificate               |
| Pathology & Microbiology                 | First Class Certificate               |
| Clinical Surgery (4 <sup>th</sup> year)  | First Class Certificate               |
| Clinical Surgery (5 <sup>th</sup> year)  | First Class Certificate               |
| Clinical Medicine (5 <sup>th</sup> year) | First Class Certificate               |
| Geriatric Medicine                       | First Class Certificate               |
| Orthopaedics                             | Second Class Certificate              |
| Clinical ENT                             | Second Class Certificate              |
| ENT Theory                               | Second Class Certificate              |
| Clinical Gynaecology                     | Second Class Certificate              |
| Surgical Paediatrics                     | Second Class Certificate              |
| Clinical Medicine (3 <sup>rd</sup> year) | Second Class Certificate              |
| Clinical Medicine (4 <sup>th</sup> year) | Second Class Certificate              |
| <b>Muirhead Award</b>                    | <b>Medicine and Surgery 1991</b>      |
| <b>Distinction</b>                       | <b>Clinical Surgery (Finals) 1991</b> |
| <b>Commendation</b>                      | <b>MBChB 1991</b>                     |

### PRIZES:

- Cook Interventional Fellowship (Sheffield & Leicester) 1999

- First Prize for the West of Scotland Rotation Second Year Project (Mallinckrodt Medical Imaging) for the presentation: "Transcatheter Superselective Embolisation of a Renal Arteriovenous Malformation in Pregnancy" 1998.
- The Kodak Prize for the presentation: "Early Experience In Subintimal Angioplasty" at the Annual General Meeting of the Scottish Radiological Society, 1998
- Prize for best paper; 'Patient Tolerance of Cervical Oesophageal Metallic Stents; Crossing The Upper Limit' at the Open Paper Meeting of the Glasgow Gastroenterology Club February 2000.

#### **HIGHER DEGREE AWARDED:**

Doctor of Philosophy, PhD, University of Sheffield 2004. Flow Dynamics and Cerebral Protection in Carotid Stenting.

#### **RESEARCH APPOINTMENTS:**

- Proctor and major contributor, The International Carotid Stenting Study (ICSS); an RCT comparing carotid stenting and carotid endarterectomy for symptomatic high-grade carotid stenosis.
- Steering and Technical Management Subcommittees, The Asymptomatic Carotid Surgery Trial-2; An RCT comparing carotid stenting and endarterectomy for significant asymptomatic carotid stenosis.
- Contributor to the BIAS Registry of Endovascular Management of Iliac Disease.
- Collaborator for the BASIL trial (Multicentre RCT of angioplasty versus surgery for patient with critical limb ischaemia).
- Collaborator for the Stag Trial; An RCT of Angioplasty versus Stenting for Iliac Occlusions.
- Award of NIHR funded sessions (0.5Pas/week).
- Member, Board of Clinical Specialties, University of Newcastle April 2009
- Academic Representative Specialty School of Radiology

#### **NATIONAL & INTERNATIONAL RECOGNITION:**

#### **INVITED LECTURER / FACULTY MEMBER:**

- Sheffield Interventional Radiology Course, Sheffield (June 2000).
- First UK Course on Fibroid Embolisation, Glasgow (December 2000).
- Second UK course on carotid stenting. Sheffield (May 2001).
- Fibroid Embolisation course, London (May-June 2001).
- Third UK course on Carotid stenting Sheffield May 2002.
- The Third UK Interventional Radiology Course, Sheffield, June 2002.
- The International Society of Pathophysiology, Budapest, June 2002.
- The Endovascular Forum Marseille March 2003.
- Cardiovascular and Interventional Radiological Society of Europe (CIRSE), Antalya, Turkey September 2003
- Invited Chairman for two Endovascular Carotid Sessions at CIRSE in Antalya, Turkey September 2003
- British Society of Interventional Radiology (BSIR) Bournemouth November 2003
- Invited Chairman Peripheral Vascular & Carotid Session BSIR November 2003.
- Research Methods Study Day, Freeman Hospital, Newcastle, January 2004.
- Renovascular Forum Birmingham, March 2004
- Society of Interventional Radiology, Phoenix, March 2004.
- Charing Cross International Symposium: Vascular & Endovascular Challenges, Incorporating the Global Endovascular Forum. April 2004.
- UK Radiological Congress (UKRC) June 2004
- International Symposium on Controversies in Vascular Surgery Copenhagen August 2004
- International Vascular and Endovascular Course 2004 Milan October 2004
- Cardiovascular and Interventional Radiological Society of Europe (CIRSE) Barcelona September 2004
- Liverpool Endovascular Masterclass October 2004
- British Society of Interventional Radiology (BSIR) Harrogate November 2004 (Chaired Session of Endovascular Repair of Abdominal Aortic Aneurysms).
- Vascular Surgical Society (UK) November 2004 (Harrogate)
- Society of Vascular Nurses Annual Conference November 2004 (Harrogate)
- Royal College of Surgeons' Teaching Day in Vascular Surgery Newcastle, November 2004.
- Veith 31<sup>st</sup> Annual Symposium New York November 2004
- Radiological Society of North America December 2004. One of my abstracts from SIR 2004 was chosen to represent the SIR at this year's RSNA meeting.
- One-day symposium North Manchester General Hospital January 2005; **KEYNOTE LECTURE**
- 27<sup>th</sup> Charing Cross International Symposium. Panel Discussion.
- VI International Symposium on Endovascular Therapeutics (SITE). Barcelona April, 2005.

- Coventry Carotid Course. May 2005
- 9<sup>th</sup> International Symposium on Critical Issues in Endovascular Grafting. Frankfurt, June 2005.
- Endovascular Forum; Extraordinary Meeting. Warwickshire, June 2005.
- Joint Vascular Research Group Warwickshire, June 2005.
- International Society of Endovascular Specialists. International Workshop, Ajaccio, Corsica. June 2005.
- Cardiovascular & Interventional Radiological Society of Europe, Nice, September 2005
- Sheffield Vascular Institute Ten Year Anniversary Meeting, Sheffield, September 2005
- 6<sup>th</sup> International Vascular and Endovascular Course (IVEC), Milan, October 2005
- 5<sup>th</sup> International Course on Carotid Angioplasty and Other Cerebrovascular Interventions, ICCA-5, Frankfurt, October 2005
- 32<sup>nd</sup> Annual Vascular and Endovascular Issues, Techniques and Horizons; Veith Symposium, New York, November 2005
- Cordis Key Opinion Leader Meeting, Carotid Stenting, Rome, November 2005
- Edinburgh Radiological Society Meeting, Edinburgh, December 2005: **KEYNOTE LECTURE**
- Controversies and Updates In Vascular Surgery, Paris, January 2006
- 28<sup>th</sup> Charing Cross International Symposium, April 2006
- Guidant Hands-on Workshop in Carotid Stenting, Brussels, April 2006
- Inaugural joint meeting of the Swedish Vascular Society and Seldinger Society of Sweden, April 2006: **KEYNOTE LECTURE**
- International Society of Endovascular Specialists. International Workshop, Ajaccio, Corsica. June 2006.
- Multidisciplinary European Endovascular Techniques, Cannes, June 2006.
- Endovascular Forum, Stratford Upon Avon, June 2006.
- Cordis Carotid Symposium, Hamburg, June 2006.
- VASCULAR 2006 (Australian & New Zealand Vascular Surgical Society Annual Meeting), Cairns, September 2006. **KEYNOTE LECTURES**
- Cardiovascular & Interventional Radiological Society of Europe, Rome, September 2006
- 7<sup>th</sup> International Vascular and Endovascular Course (IVEC), Milan, October 2006
- Carpe Diem Vascular, Barcelona 2006
- 33<sup>rd</sup> Annual Vascular and Endovascular Issues, Techniques and Horizons; Veith Symposium, New York, November 2006
- Vascular Interventional Radiologists & Vascular Surgeons – Collaboration? A Radiologist's Perspective. Vascular Surgical Society of Great Britain & Ireland November 2006.
- Do we have the right protection device and should protection devices be used routinely? Leuven, December 2006.
- A Critical Evaluation of Carotid Filters: Which One Is The Best, If Any? Controversies and Updates In Vascular Surgery, Paris, January 2007.
- Minimising Complications of Carotid Stenting Carotid Disease & Stroke – Bringing Basic Science Into Clinical Practice: Karolinska Institute, Stockholm, March 2007
- Carotid Embolisation, Detection & Protection. Bringing Basic Science Into Clinical Practice: Karolinska Institute, Stockholm, March 2007
- Towards a Cost-Effectiveness Analysis of Carotid Artery Stenting. 29<sup>th</sup> Charing Cross International Symposium, April 2007.
- Variant Vascular Anatomy. Vascular Society of Great Britain & Ireland Symposium at the Association of Surgeons of Great Britain & Ireland. Manchester April 2007.
- The Way Forwards For Cerebrovascular Disease: Carotid Stenting & Endarterectomy as Complementary Therapies. Scottish & Northern Vascular Meeting, Dalmahoy, April 2007
- Is Cerebral Protection Necessary For All Patients? European Vascular Course encompassing the Endovascular Chapter, Marseille, May 2007.
- The Asymptomatic Carotid Surgery Trials 1 & 2. European Vascular Course, Marseille, May 2007.
- Embolic Protection; The Influence of Filter Design. EuroPCR (Paris Course on Coronary Revascularisation). Barcelona May 2007.
- Patient Selection for Carotid Stenting Based on Anatomic Criteria: Rationale for Delphi consensus methods. Great Minds Symposium (Abbott Vascular), Berlin, Germany June 2007.
- Status of Carotid Artery Stenting Versus Carotid Endarterectomy: International Symposium on Controversies in Vascular Surgery; Carotid Artery Disease; Copenhagen, August 2007
- Filter, Flow Reversal or Nothing. CIRSE, Athens, September 2007.
- "Learning the technique"; An introduction to Carotid Artery Stenting. Crossroads Learning Centre, CIRSE, Athens, September 2007
- Carotid Artery Stenting Virtual Reality Workshop, CIRSE, Athens, September 2007.
- Carotid Artery Stenting; Prevention of Embolisation. Gore Workshop, CIRSE, Athens, September 2007.
- Carotid Stenting: Complication Management. Crossroad Institute, Brussels, October 2007
- Carotid Artery Stenting: The Evidence-Base. Crossroads Institute, Brussels, October 2007
- Carotid Artery Stenting Should Only Be Used When Endarterectomy Is Dangerous: Debate: Against The Motion 8<sup>th</sup> International Vascular and Endovascular Course (IVEC), Milan, October 2007

- Gore Workshop: Embolus Detection and Cerebral Protection During CAS. 8<sup>th</sup> International Vascular and Endovascular Course (IVEC), Milan, October 2007
- Carotid Artery Stenting: Ready for Everyone? State of the Art Lecture at the British Society of Interventional Radiology, Bournemouth, November 2007.
- Strategies for avoidance of embolic stroke; choice of protection device. 34th Annual Vascular and Endovascular Issues, Techniques and Horizons; Veith Symposium, New York, November 2007
- Carotid Artery Stenting : Limitations of current protection strategies. Gore Satellite Session; Veith Symposium, New York, November 2007.
- Whither carotid stenting ? Viewpoint of the vascular interventional radiologist. Belgian Stroke Council; Sixth International Symposium on Interventional Treatment of Cerebrovascular Disorders. Leuven December 2007.
- Can difficulties in carotid artery stenting be graded? Controversies and Updates In Vascular Surgery, Paris, January 2008.
- Is there any evidence that cerebral protection is beneficial? The Leipzig Interventional Course, Leipzig, January 2008
- Plaque Prolapse During Carotid Artery Stenting- How To Manage It. The Leipzig Interventional Course, Leipzig, January 2008
- Towards cost-effectiveness of carotid artery stenting. XXI International Congress on Endovascular Interventions. Phoenix, February 2008.
- Patient Selection and Pre-Procedure Imaging For Carotid Stenting. European Congress of Radiology, Vienna, March 2008
- Carotid Stenting For Symptomatic & Asymptomatic Patients. North East Stroke Research Network Annual Meeting, Sunderland, March 2008.
- "Learning the techniques: carotid stenting" EuroPCR, May 2008.
- Endovascular Forum, Stratford, June 2008.
- The Evidence for Cerebral Protection, Special Session, Cardiovascular & Interventional Radiological Society of Europe, Copenhagen, September 2008.
- South African Vascular Society, October 2008; Anatomic Variants of Relevance to the Vascular Specialist
- South African Vascular Society, October 2008; Tibial Angioplasty; Fear and loathing below the knee
- South African Vascular Society, October 2008; Tips & Tricks for successful sub-intimal angioplasty
- South African Vascular Society, October 2008; How to make carotid stenting safer
- South African Vascular Society, October 2008; Is there a role for CAS in asymptomatic patients?
- British Society of interventional radiology, Manchester, November 2008; Complex Cases Film Viewing Panel
- Moderator, peripheral interventions session, chairman supra-aortic interventions session, The Leipzig Interventional Course, Leipzig, January 2009
- The Asymptomatic carotid surgery trial 2; a regional collaboration. North East Stroke Research Network Meeting January 2009.
- How many cases are required for training in carotid artery stenting? Controversies and Updates In Vascular Surgery, Paris, January 2009.
- European Congress of Radiology, Moderator and Chairman Supra-aortic and Neuro-interventions session. Vienna March 2009
- 31<sup>st</sup> Charing Cross International Symposium, April 2009. The Delphi Consensus; A Grading on Anatomic Risk.
- 31<sup>st</sup> Charing Cross International Symposium, April 2009, Carotid Questions and Answers Session.
- 31<sup>st</sup> Charing Cross International Symposium, April 2009. Chairman Complex Cases Session.
- 8<sup>th</sup> International Symposium on Endovascular Therapeutics, The Delphi Consensus: grading anatomic risk. Barcelona May 2009
- 8<sup>th</sup> International Symposium on Endovascular Therapeutics, Is there still no evidence for EPD usefulness during CAS? Barcelona May 2009
- 8<sup>th</sup> International Symposium on Endovascular Therapeutics. Systematic review exploring the relationship between experience and outcome for CAS. Barcelona May 2009
- 8<sup>th</sup> International Symposium on Endovascular Therapeutics. Carotid complex cases session. Barcelona May 2009
- Univers The 6<sup>th</sup> joint annual meeting of the Israeli society of vascular and endovascular surgery & the Israeli society of interventional radiology. The evidence for cerebral protection devices during CAS. **KEYNOTE LECTURE** Tel Aviv may 2009.
- Univers The 6<sup>th</sup> joint annual meeting of the Israeli society of vascular and endovascular surgery & the Israeli society of interventional radiology. Should carotid stenting be performed for asymptomatics, the expert's view. **KEYNOTE LECTURE** Tel Aviv may 2009.
- British Cardiovascular Society London June 2009. The imaging and assessment of patients with carotid disease awaiting CABG and valve repair.
- Critical Issues in Endovascular Stenting Assisi June 2009. The relationship between experience and outcome for carotid artery stenting
- Critical Issues in Endovascular Stenting Assisi June 2009. A scoring system for patient selection during carotid artery stenting.

## **PRESENTATIONS TO LEARNED SOCIETIES:**

**164 (126 invited and 2/3 abstracted)**

## **REVIEWER: SCIENTIFIC JOURNALS:**

Angiology  
British Medical Journal  
British Journal of Radiology  
Cardiovascular and Interventional Radiology  
Clinical Radiology  
European Journal of Vascular & Endovascular Surgery  
Interventional Cardiology  
Journal of Endovascular Therapy  
Journal of Neurology  
Journal of Vascular Surgery  
Vascular  
World Journal of Surgical Oncology

## **REVIEWER; SCIENTIFIC CONTENT OF MEETINGS:**

British Society of Interventional Radiology: Scientific Sessions 2004. 2006. 2007  
European Society for Vascular Surgery 2008.

## **REVIEWER; GRANT-GIVING BODIES:**

Stroke Association

## **Editorial Board:**

Journal of Endovascular Therapy  
Vascular  
The Journal of Cardiovascular Surgery  
Consultant to the Editors: Cardiovascular and Interventional Radiology

## **POSITIONS OF RESPONSIBILITY:**

### **Local & Regional:**

- Newcastle and North Tyneside Local Research Ethics Committee II. October 2003.
- Trust Clinical Ethics Advisory Group (Newcastle Teaching Hospitals) June 2005
- Member of the University of Newcastle Faculty Research Group for Stroke
- Regional (North East) Research Steering Group (Radiology) September 2008
- North of England Cardiovascular Network TIA Imaging & Surgical Interventions Subgroup January 2009
- North of England Cardiovascular Network Hyperacute and TIA services Action Planning May 2009

### **National:**

- Royal College of Radiologists' Blue Skies Working Party for Interventional Radiology, June 2005
- Steering Committee & Technical Management Committee, Asymptomatic Carotid Surgery Trial (ACST-2), November 2005
- UK Carotid Endarterectomy Carotid Audit Committee (UKCEAA), January 2006
- Interventional Radiology Subcommittee of the Royal College of Radiologists February 2006
- Co-opted member Education Subcommittee of the British Society of Interventional Radiology November 2005
- Elected Member: Membership & Rules subcommittee of the British Society of Interventional Radiology June 2007
- Co-opted Chair, Royal College of Radiologists Standards of Practice; Carotid Imaging April 2008
- Advisor to the MHRA, January 2009

### **International:**

- The International Society for Vascular Surgery (ISVS). Training and Standards Committee November 2005

## **PUBLICATIONS;**

## **BOOK EDITOR:**

Springer "Carotid Stenting; A Practical Guide" Published December 2008.



## BOOK CHAPTERS:

1. "Emergency Pediatric Radiology". Springer Verlag 1999.  
Chapter : Genital Emergencies. A.S. Hollman, **S Macdonald** (70%)
2. Chemoembolization, eMedicine Journal, July 2001, Volume 2, Number 7  
Khan AN, **Macdonald S**, Tam E, Sheen A, Sherlock D. Editors: Watkinson T, Coombs BD, Coldwell DM, Krasny RM, Davis LM (50%)
3. Liver, Trauma eMedicine Journal January 2001, Volume 3, Number 1 Khan AN, Vadejar H, **Macdonald S**, Chandramohan M. Editors: Lamki N, Coombs BD, Gay SB, Krasny RM, Lin EC (50%)
4. Portal Hypertension eMedicine Journal, August 2001, Volume 2, Number 8  
Khan AN, **Macdonald S**, Sherlock D, Ali M. Editors: Koslin DB, Combs BD, Cho KJ, Krasny RM, Haskal ZJ (50%).
5. Portal Vein Thrombosis e-Medicine Journal, January 2001, Volume 1, Number 1 Khan AN, **Macdonald S**, Sheen A, Tam E, Sherlock D.  
Editors: Koslin DB, Coombs BD, Friedman AC, Krasny RM, Lin EC (50%)
6. Varicocele eMedicine Journal, January 2002, Volume 3, Number 1. Khan AN, Winarso P, **Macdonald S**. Editors: Cohen HL, Coombs BD, Rifkin MD, Krasny RM, Lin EC (50%).
7. NeuroShield™ Filter: Description-First Results in Angioplasty and Stenting of Carotid and Supra-Aortic Trunks, **Macdonald S**, Gaines PA. Editors Leon M, Mathias K, Ohki T, Henry M. Martin Dunitz Publishers. 2004 (90%)
8. Aspergillosis, Thoracic eMedicine Journal, January 2002, Volume 3, Number 1  
Khan AN, Jones C, **Macdonald S** Editors: Singh S, Coombs BD, Stern EJ, Krasny RM, Lin C (50%)
9. Day Case Angiography and Intervention. **S Macdonald**  
Chapter 10, Part II. Pathways of Care in Vascular Surgery, pages 77-86. Pathways of care in Vascular Surgery, Editors J D Beard, Shelagh Murray, TFM Publishing Ltd, 2002 (100%)
10. Evidence-based Efficacy in Preventing Future Stroke and CAVATAS  
**Sumaira Macdonald**, Trevor J Cleveland, Peter A Gaines. Section I, Chapter3, Pages 23-38.  
In Carotid Stenting. Lippincott Williams & Wilkins 2004 Editors Nadim Al-Mubarak, Gary Roubin (70%)
11. The Evolution of carotid angioplasty and stenting: Where are we now? **S Macdonald** Part III Chapter 13 Pages 113-125. In Endovascular Intervention- Current Controversies. Editors Anna Maria Belli and Anthony Watkinson. 2004 (100%)
12. Coeliac or superior mesenteric artery disease (and renal artery disease)- Imaging Modality Options. Towards vascular and Endovascular Consensus. **S Macdonald & J Rose**: Editor Roger M Greenhalgh. Biba Publishing 2005 (50%)
13. Unusual Vascular Anatomy for the Vascular Surgeon: In Joint Vascular Research Group-Rare Vascular Disorders. **S Macdonald & K Overbeck**: Editor Jonathan Earnshaw, Chairman JVRG. 2005 (70%)
14. IVC filters. **S Macdonald** In "Diseases of the veins and lymphatics". Editors Professor Gerry Stansby and Dr Nicos Labropoulos. Publishers Marcel Dekker, New York. 2005 (100%)
15. More Vascular and Endovascular Controversies: "Carotid Artery Stenting with cerebral protection is essential: The Case Against". **S Macdonald** Towards vascular and Endovascular Consensus. Editor Roger M Greenhalgh. Biba Publishing 2006 (100%)
16. Controversies and Updates In Vascular Surgery. Evidence For The Routine Use Of Carotid Filters During Carotid Artery Stenting. **S Macdonald**. Becquemin, JP Alimi YS Eds. Editionee Minerva Medica Torino 2006 (100%).
17. Endovascular therapies: current evidence carotid filters: evidence, availability and future predictions. In Endovascular Intervention- Current Controversies. **S Macdonald** Editors Mike G Wyatt and Anthony Watkinson 2006 (100%)
18. Critical Evaluation of Carotid Filters: Which is the best one, if any ? **Sumaira Macdonald**, Becquemin, JP Alimi YS Eds. Editionee Minerva Medica Torino 2007.
19. Imaging options for coeliac or superior mesenteric artery disease (& renal artery stenosis). **S Macdonald**, J Rose. pp. 289-304. Vascular & Endovascular Consensus Update. Roger M Greenhalgh (ed), BIBA Publishing, London (2008) ISBN 0-9544687-5-9.
20. Can difficulties in carotid artery stenting be graded? **Sumaira Macdonald**; Becquemin JP, Alimi YS Eds. Editionee Minerva Medica Torino 2008
21. Extracranial cerebrovascular disease In Vascular and Endovascular Surgery. A. Ross Naylor and **Sumaira Macdonald**. Eds Jonathan Beard and Peter Gaines. In Press 2008
22. Does Learning Curve Influence the Outcome of CAS? In Angioplasty and Stenting of the Carotid and Supra-aortic Trunks. **Sumaira Macdonald** 2<sup>nd</sup> Edition, Editors Michel Henry, Edward Diethrich, Antonio Ploydorou. In press 2009
- 23 "How many cases are necessary to be trained for carotid angioplasty?" Graeme Weir, Jonathan Smout, Gerry Stansby, **Sumaira Macdonald** In Controversies and Updates in Vascular Surgery Becquemin, JP Alimi YS, Gerard JL Eds. Edizioni Minerva Medica Torino 2009.
24. The Delphi Consensus; A Grading on Anatomic Risk, Vascular & Endovascular Consensus Update. **Sumaira Macdonald** Roger M Greenhalgh (ed), BIBA Publishing, London (2009)
25. Carotid Interventions In Interventional Radiology **Sumaira Macdonald** Ed Raman Uberoi. Oxford University Press. May 2009

## PUBLICATIONS- JOURNAL ARTICLES:

### Ten Most Important (Percentage Contribution; Impact Factor)

1. Muscle ultrasound in the assessment of suspected neuromuscular disease in childhood. S.M. Zuberi, N. Matta, S. Nawaz, McWilliams A, J.B.P. Stephenson R.C. McWilliam, A. Hollman. *Neuromuscular Disorders* 1999;9: 203-207 (60%; 3.34)
- \*2. Comparison of Technical Success and Outcome of Tunneled Catheters Inserted via the Jugular & Subclavian Approaches. **Sumaira Macdonald**, Andrew J.B Watt, Dermot McNally, Richard D Edwards, Jonathan G Moss. *Journal of Vascular & Interventional Radiology* 2000;11:225-231. (80%; 2.68)
- \*3. Patient Tolerance of Cervical Esophageal Metallic Stents. **Sumaira Macdonald**, Richard D Edwards, Jonathan G Moss. *JVIR* 2000;11:891-898. (80%; 2.68)
- \*4. Protected carotid stenting: Safety and Efficacy of the MedNova NeuroShield filter. **Sumaira Macdonald**, Graham Venables, Trevor Cleveland, Peter Gaines. *Journal of Vascular Surgery* 2002;35(5):966-972 (80%; 3.17)
- \*5. Multicenter Evaluation of Carotid Artery Stenting With A Filter Protection System. Al-Mubarak N, Columbo, A, Gaines, PA, Iyer, SS, Corvaja, N, Cleveland, TJ, **Macdonald, S**, Brennan, C, Vitek, JJ. *Journal of The American College of Cardiology* 2002;39:841-846 (50%; 9.2)
6. Brain Injury Secondary To Carotid Intervention. **Sumaira Macdonald**. *Journal of Endovascular Therapy: Endovascular Therapy Reviews* 2007;14:219-231 (100%; 1.8)
7. Invited Commentary: Influence of antiplatelet therapy on cerebral micro-emboli after carotid endarterectomy using postoperative transcranial doppler monitoring. *Eur J Vasc Endovasc Surg.* 2007;34:143-144 (100%; 3)
- \*8. Towards Safer Carotid Artery Stenting (CAS): A scoring system for Anatomic Suitability. **Sumaira Macdonald**, Robert Lee, Robin Williams, Gerry Stansby on behalf of the Carotid Stenting Delphi Consensus Panel. *Stroke* 2009;40:1698-1703. (70%; 6.5)
9. A case of life-threatening post partum haemorrhage. **Macdonald S**, Brown K, Wyatt MG. *BMJ* 2008;337:a2425 (70%; 12.8)
10. Brain Attack? **Macdonald S**, Dixit A, Wyatt MG. *BMJ* 2009; 338:a3109.doi: 10.1136/bmj.a3109. (70%; 12.8)

### Other Articles:

11. "Regional Chemotherapy of the Breast". **Sumaira Macdonald**, Allan W. Reid, Colin S McArdle, and Douglas H.A. McCarter. *Seminars in Interventional Radiology* 1998;15:385-395. (80%)
12. Technical Report: Common Iliac Artery Access During Endovascular Aortic Aneurysm Repair Facilitated by a Transabdominal Wall Tunnel. **Macdonald S**, Byrne D, Rogers P, Moss JG, Edwards RD. *Journal of Endovascular Therapy* 2001;8:135-138. (80%, 1.8)
13. Day-case Interventional Vascular Practice. **Macdonald S**, Thomas S.M, Cleveland T.J, Gaines P.A. *Intervention* 2000;4:72-77. (80%)
14. Outpatient Vascular Intervention: A Two-Year Experience. **Sumaira Macdonald**, Steven M Thomas, Trevor J Cleveland, Peter A Gaines. *CardioVascular and Interventional Radiology*;2002;25:403-412 (70%; 0.9)
15. Neurological Outcomes After Carotid Stenting Protected With The NeuroShield Filter Compared To Unprotected Stenting. **Macdonald, S**, McKevitt, F, Venables, GS, Cleveland TJ, Gaines, PA. *Journal of Endovascular Therapy* 2002;9:777-785. (80%; 1.8)
16. Angioplasty or Stenting in Adult Coarctation of the Aorta? A Retrospective Single Center Analysis Over a Decade. **Sumaira Macdonald**, Trevor J Cleveland, Steven M Thomas, Peter A Gaines. *Cardiovascular and Interventional Radiology* 2003;26 (4):357-364 (70%; 0.9)
17. Current Concepts of Cerebral Protection During Percutaneous Carotid Intervention. **Sumaira Macdonald**, Peter Gaines. *Vascular Medicine* 2003;8:25-32 (70%; 0.95)
18. Short-term changes in cerebral micro-hemodynamics following carotid stenting assessed by magnetic resonance perfusion imaging. ID Wilkinson, PD Griffiths, N Hoggard, TJ Cleveland, PA Gaines, **S Macdonald**, F McKevitt, GS Venables. *American Journal of Neuroradiology* 2003 ;24:1501-1507 (20%; 2.5)
19. Bronchopulmonary Aspergillosis: A Review. Khan AN, Jones C, **Macdonald S**. *Current Problems in Diagnostic Radiology* 2003;32:156-168 (40%)
20. Complications following Carotid Angioplasty and Carotid Stenting In Patients With Symptomatic Carotid Artery Disease. McKevitt, FM, **Macdonald, S**, Venables, GS, Cleveland, TJ, Gaines, PA. *Cerebrovascular Diseases* 2004;17: 28-34. (40%; 2.3)
21. Is the Endovascular Treatment of Carotid Stenosis in High-risk Patients Really Safer than Carotid Endarterectomy?. *Cerebrovascular Diseases* 2004;17: 332-338. F McKevitt, **S Macdonald**, GS Venables, TJ Cleveland, PA Gaines. (40%; 2.3)
22. Quality Assurance Guidelines for the Performance of Carotid Stenting: European Standards adopted and modified by CIRSE in cooperation with SIR Standards of Practice Committee.

**Sumaira Macdonald**, Trevor J Cleveland, Peter A. Gaines. Cardiovascular & Interventional Radiological

**Society of Europe.** [www.cirse.org/members lounge>standards of practice>quality improvement guidelines](http://www.cirse.org/members/lounge/standards_of_practice/quality_improvement_guidelines) (90%)

23. Is carotid artery stenting equivalent or superior to carotid endarterectomy for treatment of carotid artery stenosis? Best Evidence Topic- Cardiac general Vivek Shrivastava, Siuchan Sookhoo, **Sumaira Macdonald**, Joel Dunning Interactive Cardiovascular and Thoracic Surgery 2005;4:550-554 (30%);

24. Patient Information on Carotid Artery Disease, diagnosis and intervention. On behalf of the Cardiovascular and Interventional Radiological Society of Europe .**Sumaira Macdonald:** <http://www.cirse.org/index.patients> and public>IRprocedures>carotid stenting.

25. Use of the Profunda Femoris to Facilitate Closure of an Antegrade Puncture Using the StarClose Device After Proximal SFA Angioplasty. Yeung-Ngok-Kao, S, Fisher RK, Williams RET, Jackson RW, Rose J, **Macdonald S.** Journal of Endovascular Therapy 2006; 13:522-526 (80%; 1.8)

26. The Evidence for Cerebral Protection. **Sumaira Macdonald.** European Journal of Radiology 2006; 60:20-5 (Epub 2006 Sep 12). (100%; 1.9)

27. Is There Any Evidence That Cerebral Protection Is Beneficial?: Carotid Artery Stenting: Experimental Data. **Sumaira Macdonald.** The Journal of Cardiovascular Surgery 2006;47: 127-136 (100%; 0.8)

28. A Multicenter Safety and Efficacy Analysis of Assisted Closure After Antegrade Arterial Punctures Using the StarClose Device Robin Edward Thomas Williams Claude Y Angel, Ryad Bourkaib, Philippe Brenot, Philippe Commeau, Robert Kendall Fisher, Ralph Jackson, Caroline Helen Kay, Olivier Le Dref, Jean-Yves Riou, John Rose, **Sumaira Macdonald.** Journal of Endovascular Therapy 2007;14:498-505 (60%; 1.8)

29. Strategies for Avoidance of Non-embolic Stroke During Carotid Artery Stenting. **Sumaira Macdonald.** Journal of Cardiovascular Surgery 2007;48:27-37 (100%; 0.8).

30. Shaping the Future of Interventional Radiology. Royal College of Radiologists RCR Ref No BFCR (07) 7. Cleveland TJ, England R, **Macdonald S**, Robinson G, Francis I, Young T, Watkinson T, Manns R, Nicholson T.

31. Does Carotid Stent Cell Design Matter?

Schillinger M, Gschwendtner M, Reimers B, Trenkler J, Stockx L, Mair J, **Macdonald S**, Karnel F, Huber K, Minar E. Stroke 2008;39:905-909. (10%; 6.5)

32. Cochrane Systematic Review. Cryoplasty for peripheral vascular disease. Protocol. McCaslin JE, **Macdonald S**, Stansby G *In Press*

#### PhD Thesis:

**Thesis for the Degree of Doctor of Philosophy: Neuroprotection and flow dynamics in carotid stenting.** University of Sheffield Examined June 2004. Accepted with minor amendments September 2004, formally awarded October 2004. Graduation Ceremony January 2005.

University of Sheffield Main Library Volumes I & II 2004 [MO115661SH] Main Lib Thesis 12638

#### Publications: Case Reports

1.Case Report: Endovascular Treatment of Acute Carotid Blow-out Syndrome.

**Macdonald S**, Gan J, McKay AJ, Edwards RD. Journal of Vascular and Interventional Radiology 2000 Oct;11(9):1184-8. (80%; 2.67)

2.Embolisation of Renal Arteriovenous Malformation (AVM) in Pregnancy: Case report and literature review.

**Macdonald S**, Edwards RD.

Scottish Medical Journal 2001; 46:52-53.(80%; 0.5)

3.Percutaneous Management of PTFE Dialysis -Graft Pseudoaneurysm by Ultrasound-Guided Thrombin Injection

**Macdonald S**, Cleveland T.J. Journal of European Radiology and Eurorad (Online) 2000

<http://eurorad.org/case.cfm?uid=681> (80%)

4. Dissection of the subclavian artery during percutaneous coronary intervention via the left internal mammary artery – a combined angiologic solution. Allison Morton<sup>1</sup>, **Sumaira MacDonald**<sup>2</sup>, Trevor Cleveland<sup>2</sup>, Peter Gaines<sup>2</sup>, David Cumberland<sup>1,2</sup>, Julian Gunn<sup>1</sup> Departments of Cardiology<sup>1</sup> and Vascular Radiology<sup>2</sup>

Stent 2001;3:87-93 (30%)

5. Placement of a Retrievable Günther Tulip Filter in the Superior Vena Cava for Upper Extremity Deep Venous Thrombosis. Sanjay Nadkarni, **Sumaira Macdonald**, Trevor J Cleveland, Peter A Gaines.

CardioVascular and Interventional Radiology 2002;25 (6): 524-526 (80%; 0.9)

6. Blunt Renal Trauma in Adult Polycystic Kidney Disease and the Use of Nephron Sparing Selective Arterial Embolization- A Case Study. Reay EK, McEleny K, McDonald S, Thorpe AC. J Trauma, 2009;66:564-566.

#### Publications: Media

1. Everything You Ever Wanted To Know About Interventional Fellowships in the UK but Were Too Afraid To Ask. **Macdonald S.** British Society of Interventional Radiology Newsletter November 2002.

2. Refined filter-type devices would lower stroke rate. **Macdonald S** Vascular News Issue 27, August 2005. Biba Publishing.

3. An Overview Of The Current Carotid Trials. **Macdonald S.** Cirse Daily News, September 2005

4. Perspectives on Recent Carotid Artery Stenting Data: An Interview. **Macdonald S.** Endovascular Today 2007; 6: 24-29.

5. Gore Medical Newsletter, Scandinavia. Carotid Disease and Stroke, Proceedings of the congress held at the Karolinska Institute. **Macdonald S** May 2007
6. Asymptomatic Carotid Stenting Trial Design. Interview, **Sumaira Macdonald**, Endovascular Today September 2007
7. Filter, Flow Reversal Or Nothing. **Macdonald S**. CIRSE Daily News September 2007
8. Carotid Artery Stenting: Does Experience Matter?. **Sumaira Macdonald**, Jonathan Smout, Gerry Stansby. Endovascular Today June 2008.
9. Can experience really make a difference to outcome for carotid artery stenting (CAS)? Sumaira Macdonald, Jonathan Smout, Gerry Stansby CIRSE Daily News September 2008.
10. Carotid Artery Stenting: Does Experience Matter?. **Sumaira Macdonald**, Jonathan Smout, Gerry Stansby. Endovascular Today Buyers' Guide December 2009.
11. Towards Safer Carotid Stenting -A Scoring System For Anatomic Suitability. Critical Issues Now! **Sumaira Macdonald**. May 2009.
12. Guidance for carotid stenting. Nature Reviews of Cardiology Research Highlights. **Sumaira Macdonald**, Sharmini Rajanayagam, Associate Editor, Nature Reviews Cardiology.

### **Publications: Letters**

1. Re: Carotid Stenting With Distal-Balloon Protection Via the Transbrachial Approach. **Macdonald S**, Gaines PA, Cleveland TJ. Journal of Endovascular Therapy 2002;9 (2):253 (70%; 1.8)
2. Re: Modified Technique for Using Vascular Sheaths in Carotid Artery Stent Placement. **Macdonald S**, Gaines PA, Cleveland TJ. Journal of Endovascular Therapy 2002;9 (3):383-384 (70%; 1.8)
3. Re: Recent developments in vascular surgery. **Macdonald S**, Nicholson T. Training in Endovascular Techniques. Rapid Response, British Medical Journal 10<sup>TH</sup> November 2003. (60%; 9.05)

### **TEACHING & TRAINING:**

1. Co-convenor:  
"The March Course; An Introduction to Endovascular Techniques". Cordis, UK, Johnson & Johnson are the title sponsors for this course and the course has been awarded 19 Category 1 CPD points by the Royal College of Radiologists.
2. Co-opted onto the Education Subcommittee of the British Society of Interventional Radiology (BSIR).
3. Member of the International Society of Vascular Surgery (ISVS) training & standards committee.
4. Author of interactive web-based teaching modules for caval filtration and carotid imaging and stenting for The Radiology Integrated Training Initiative, managed by the Royal College of Radiologists In collaboration with the project's Instructional Designer, I designed and wrote the teaching module for inferior vena cava filters.
5. Co-author, the Cardiovascular & Interventional Radiological Society of Europe's Quality Assurance Guidelines for Carotid Stenting.
6. Director of the Endovascular Fellowship at the Freeman hospital which is open to interventional radiology and senior vascular surgical trainees.

### **PROCTOR (PHYSICIAN INSTRUCTOR) FOR CAROTID STENTING:**

- Abbott Vascular
- Asymptomatic Carotid Stenting Study-2 (ACST-2)
- Cordis Endovascular UK, Johnson & Johnson
- Cordis Endovascular Australia, Johnson & Johnson
- Crossroads Institute of Therapy Advancement (Europe)
- The International Carotid Stenting Study (ICSS)
- Invatec Europe

### **Paid Consultant / Research Support:**

- Abbott Vascular
- CR Bard, USA
- Cordis Endovascular
- ev3
- WL Gore, USA
- Medtronic

**Related Proceedings Appendix**

There are no related proceedings.